REMARKS

Applicants confirm the election of Claims 1 - 35 for continued prosecution. Claims 36 - 39 have been cancelled without prejudice, as being to a non-elected claim group, as set forth above.

Claim Rejections Under 35 USC § 112

Claims 1 - 8, 11 - 16, and 28 - 35 are rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

In particular, the Examiner suggests that, in Claim 1, the phrase "capable of forming an electrochemical cell in combination with the conductive layer" renders the claim indefinite because it is unclear what makes a material capable of forming an electrochemical cell, and it is unclear what difference it makes whether or not an electrochemical cell is capable of being formed (because there is no positive method step of forming an electrochemical cell). Claim 1 has been amended to provide a method step (c) during which an electrochemical cell is formed. One skilled in the art to which the inventive subject matter belongs would understand what makes a material capable of forming an electrochemical cell and, in particular, what materials are capable of forming an electrochemical cell in conjunction with a given conductive material. This subject matter is discussed, for example, at Page 8, lines 9 - 21, of applicant's originally filed Specification.

The Examiner also suggests that, in Claims 3, 11, and 33, the phrase "alternating layers" renders the claim indefinite because "alternating layers" implies that there are more than two layers, but there is no positive method step which recites the presence of at least one conductive layer and at least one second material layer. Independent Claims 1, 9, and 29 (from which Claims 3, 11, and 33 respectively depend) have been amended to include a method step which recites that a stack of layers is provided, including at least one layer of conductive material and at least one layer of a second material. Further, Claims 3, 11, and 33 have each been amended to specifically recite that

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the stack of layers comprises alternating layers of a conductive material and a second material (or glass).

The Examiner further suggests that Claims 8, 16, 28, and 29 are indefinite because there is no step of forming any electrochemical cell and it is unclear what the term "parallel" is intended to mean in this context. The Examiner further proposes that there is insufficient antecedent basis for the term "electrochemical cell" in Claims 8, 16, 28, and 29.

Independent Claims 1, 9, and 29 have each been amended to recite that a plurality of vertically stacked electrochemical cells is formed. This amendment is supported in applicant's Specification beginning at Page 10, line 11, through Page 11, line 2; and, at Page 13, line 10, through Page 14, line 11.

Claims 8 and 16 have been amended to recite that each electrochemical cell formed is in a parallel circuit with each other electrochemical cell. Applicant's Specification at Page 9, lines 11 - 17, applicant teaches: "In one particularly useful embodiment of the invention, alternating semiconductor (or metal) and glass layers in a stack are anodic bonded by contacting electrodes to consecutive layers in the stack, rather than contacting electrodes only to the top and bottom layers of the stack. With this technique, there are two effects. First, the glass electrochemical cells are in parallel, rather than in series. A second, attendant effect is that there is no longer a potential gradient throughout the stack. Instead, the only potential gradient is between consecutive layers." The terms "in parallel" and "in series" are terms well known in the electrical arts to mean the flow of electrical current is in a parallel circuit or in a series circuit.

An example of a "series" connection of electrochemical cells is illustrated in Figure 1, and discussed at page 2, line 9, through page 4, line 2, of the "Background of the Invention" section of applicants' specification. The prior art "series" connection of electrochemical cells is illustrated in applicant's Specification in Figure 1, and is in contrast to the "parallel" connection of electrochemical cells illustrated, for example, in Figure 2 (described at Page 10, line 3, through Page 11, line 2) and in Figure 3 (described at Page 13, lines 10 - 22).

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Claim 28 has been cancelled without prejudice, as it is identical to Claim 16.

The Examiner proposes that Claim 29 is indefinite because there are no process steps for anodic bonding and it is unclear what materials are being bonded together. Claim 29 has been amended, as set forth above, to recite that stacked layers are anodically bonded, where each layer to be bonded is in contact with an electrode, and that a plurality of stacked electrochemical cells is formed. The amendments to Claim 29 are supported, for example, at Page 10, lines 3 - 10, and Page 13, lines 10 - 22, of applicant's originally filed specification.

In view of the above explanations and amendment to the claims, the Examiner is respectfully requested to withdraw the rejection of Claims 1 - 8, 11 - 16, and 28 - 35 under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

The amendments to the claims set forth above are fully supported by the originally filed Specification, Claims, and Drawings. No new matter has been added to the application as a result of the amendments set forth above.

Applicants would like to mention that the amendments to the claims set forth above are made solely for the purpose of clarifying the meaning of the claim language so that the Examiner is more comfortable and so that the allowance of the present application may be expedited. The amendments should in no way should be construed as agreement with or acquiescence to the Examiner's grounds for rejection of the claims under 35 USC § 112, second paragraph.

Claim Rejections Under 35 USC § 102 and § 103

Claims 1, 2, 9, 10, and 17 - 21 are rejected under 35 USC § 102(b), as anticipated by U.S. Patent No. 4,802,952, to Kobori et al.

Claims 22 - 27 are rejected under 35 USC § 103(a) as being unpatentable over Kobori et al., in view of allegedly admitted prior art.

Kobori et al. pertains to a method of manufacturing semiconductor absolute pressure sensor units. The method includes anodically bonding a silicon sensor wafer and a silicon cap wafer with a borosilicate glass layer disposed therebetween. Anodic bonding is performed using a matrix shaped conductive layer which functions as a negative electrode during the anodic bonding process, so that sodium ions contained in the borosilicate glass layer are kept away from bond regions. (Abstract)

Applicant's method does not include the use of a matrix shaped conductive layer which is present between silicon and glass layers to keep sodium ions away from bonding regions.

In addition, applicant forms a plurality of vertically stacked electrochemical cells within a stack of layers, where each layer is in contact with an electrode during anodic bonding. This is in contrast with the teachings of Kobori et al., where the power applied for anodic bonding is applied to the silicon cap wafer and to the terminals of the matrix shaped conductive layer which is placed between layers to be bonded.

Kobori et al. does not teach or even suggest an anodic bonding method of the kind described by applicant. One skilled in the art, upon reading the content of the Kobori et al. disclosure, would not be led in the direction of applicant's invention. In light of the amendments to independent Claims 1 and 9, and the distinctions elaborated upon above, applicants respectfully request withdrawal of the rejection of Claims 1, 2, 9, 10, and 17 - 21, under 35 USC § 102(b), over Kobori et al., and withdrawal of the rejection of Claims 22 - 27, under 35 USC § 103(a), over Kobori et al. in view of the admitted prior art.

The Examiner mentioned, under "Allowable Subject Matter", that the prior art of record fails to suggest the concept of alternating conductive layers and layers of a second material such as glass and separately contacting an electrode to each individual layer.

Applicant asserts that the amended claims have overcome all of the Examiner's rejections of various claim language under 35 USC § 112, second paragraph. Applicant further asserts that he has

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overcome the rejections of various claims under 35 USC § 102 and § 103, over Kobori et al. The Examiner is respectfully requested to enter the present amendments and to pass the application to allowance.

The Examiner is invited to contact applicants' attorney with any questions or suggestions, at the telephone number provided below.

Respectfully Submitted,

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AMENDMENT "A" UNDER 37 CFR § 1.111
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 8, 16, ~~28~~, and ~~36~~ - ~~39~~ have been cancelled without prejudice.

Claims 1 - 3, 5, 9 - 11, 13, 17, 27, and 29 - 33 have been amended as follows.

1. (Once Amended) A method of anodic bonding at least one layer of conductive [layer] material to at least one layer of a second material which is capable of forming an electrochemical cell in combination with said layer of conductive[layer, wherein] material, said method comprising:

a) providing a stack of layers, including said at least one layer of conductive material and said at least one layer of a second material;

b) contacting layers to be bonded within said stack of layers with electrodes in a manner such that cations formed during said bonding are directed away from a critical bonding surface ; and

c) anodically bonding said at least one layer of conductive material and said at least one layer of a second material, wherein a plurality of vertically stacked electrochemical cells are formed, and wherein each layer in said stack of layers is in contact with an electrode.

2. (Once Amended) A method according to Claim 1, wherein [contacting] said electrodes [used in said anodic bonding] are contacted with layers to be bonded in a manner such that a contamination surface of said layer of a second material to which said cations are directed, or upon which compounds of said cations are formed during said bonding , can be removed, or such that said contamination surface can be cleaned to remove said compounds, or such that said contamination surface is located relative to said critical bonding surface in a manner such that said contamination surface does not affect the function of a device which includes said critical bonding surface.

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3. (Once Amended) A method according to Claim 2, wherein said stack of layers comprises alternating layers of said conductive [layer] material and said second material , and wherein said alternating layers are bonded using a combination of contacting electrodes which contact each alternating layer separately.

5. (Once Amended) A method according to Claim 3, wherein each of said [conductive] layers of conductive material is contacted by an extended contact electrode which does not contact a layer of said second material , and wherein each layer of second material is contacted by an extended contact electrode which does not contact a layer of said conductive material.

8. (Once Amended) A method according to Claim 1, wherein each electrochemical cell formed is in a parallel circuit with each other electrochemical cell.

9. (Once Amended) A method of anodic bonding at least one conductive material layer to at least one glass layer to form a bonded structure, wherein said method comprises:

a) providing a stack of layers including said at least one conductive material layer and said at least one glass layer;

b) contacting layers to be bonded within said stack with electrodes in a manner such that sodium ions formed during said bonding are directed away from a critical bonding surface ; and

c) anodically bonding said at least one conductive material layer and said at least one glass layer, wherein a plurality of vertically stacked electrochemical cells are formed, and wherein each layer in said stack of layers is in contact with an electrode.

10. (Once Amended) A method according to Claim 9, wherein [contacting] said electrodes [used in said anodic bonding] are contacted with layers to be bonded in a manner such that a contamination surface of said glass layer to which said sodium ions are directed, or upon which sodium compounds

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are formed during said bonding , can be removed, or such that said contamination surface can be cleaned to remove said sodium compounds, or such that said contamination surface is located relative to said critical bonding surface in a manner such that said contamination surface does not affect the function of a device which includes said critical bonding surface.

11. (Once Amended) A method according to Claim 10, wherein said stack of layers comprises alternating layers of said conductive material and glass , and wherein said alternating layers are bonded using a combination of contacting electrodes which contact each alternating layer separately.

13. (Once Amended) A method according to Claim 12, wherein each of said conductive material layers is contacted by an extended contact electrode which does not contact a glass layer , and wherein each glass layer is contacted by an extended contact electrode which does not contact a [said] conductive material layer.

16. (Once Amended) A method according to Claim 9, wherein each electrochemical cell formed is in a parallel circuit with each other electrochemical cell.

17. (Once Amended) A method according to Claim 9, wherein said conductive [layer comprises] material is a semiconductor.

27. (Once Amended) The method of Claim 9, wherein said bonded structure comprises at least three conductive material layers and at least two [layers of] glass layers.

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29. (Once Amended) A method of anodic bonding [in which] at least one layer of a conductive material to at least one layer of a second material which is capable of forming an electrochemical cell [formed is in parallel with each other electrochemical cell] in combination with said layer of conductive material, wherein said method comprises:

a) providing a stack of layers including said at least one layer of conductive material and said at least one layer of a second material;

b) contacting each layer to be bonded within said stack of layers with an electrode; and

c) anodically bonding said at least one layer of conductive material and said at least one layer of a second material employing a plurality of stacked electrochemical cells.

30. (Once Amended) A method according to Claim 29, wherein layers to be bonded within said stack of layers are each contacted with an electrode in a manner such that cations formed during said anodic bonding are directed away from a critical bonding surface.

31. (Once Amended) A method according to Claim 30, wherein [contacting] said electrodes [used in said anodic bonding] are contacted with layers to be bonded in a manner such that a surface contaminated with compounds formed from said cations is directed away from a critical bonding surface or can be removed.

32. (Once Amended) A method according to Claim 30, wherein [contacting] said electrodes [used in said anodic bonding] are contacted with layers to be bonded in a manner such that a surface contaminated with compounds formed from said cations [directed away from a critical bonding surface] is located relative to [said] a critical bonding surface such that said [contamination] contaminated surface does not affect the function of a device which includes said critical bonding surface.

33. (Once Amended) A method according to Claim 30, wherein said stack of layers comprises alternating layers of said conductive material and said second material, and wherein said alternating layers are bonded using a combination of contacting electrodes which contact each alternating layer [by a separate electrode] separately.

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